L 6357-66 EWT(1)/EWT(m)/EWP(1)/EWP(b)/T/EWP(t) IJP(c) WH

ACC NR: AP5026105 SOURCE CODE: UR/0386/65/002/005/0246/0250

44,55 44,55 44,55 44,55 44,55

AUTHOR: Mash, D. I.; Morozov, V. V.; Starunov, V. S.; Tiganov, Ye. V.; Fabelinskiy, I. L.

77

44,55

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy institut Akademii nauk SSSR) B

TITLE: Stimulated Brillouin scattering in solid amorphous bodies and liquids

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 5, 1965, 246-250

TOPIC TAGS: Brillouin scattering, stimulated scattering, stimulated Brillouin scattering, laser, laser effect, nonlinear effect, nonlinear optics 21,44,55

ABSTRACT: Stimulated Brillouin scattering was observed in three kinds of optical glasses, fused quartz and seven different liquids excited by a giant pulse from a ~100 Mw ruby laser using a setup described previously (Mash, D. I., et al. Pisma ZhETF, 2, 41, 1965). Table 1 lists some of the experimental data on the Brillouin shifts $\Delta\nu$, the hypersonic acoustic velocity ν calculated from the present experimental data on $\Delta\nu$, ν determined from ordinary (spontaneous) Brillouin shifts, and ν obtained from direct hypersonic measurements. The systematic differences between the hypersonic acoustic velocities calculated from the spontaneous Brillouin shifts and those obtained from stimulated Brillouin scattering were within the limits of

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L 6357-66

ACC NR: AP5026105

Table 1. Hypersonic acoustic velocities

Material	Stimulated Br. Scattering		Spontaneous Br. Scatt.	Hypersound Measurements
	$\Delta\nu$, cm^{-1}	v, m/sec	v, m/sec	v, m/sec
Fused quartz	0.811±0.004	5804±30	5800 5840	5968
Crown glass	0.836±0.003	5906±40	-	-
Benzene	0.206±0.002	1494±15	1477±4	1484
Nitrobenzene	0.222±0.002	1546±15	-	1478
Carbon disulfide	0.181±0.002 0.190±0.002	1168±15 1232±15	1285±22	1158
Acetic acid	0.143±0.002	1105±20	1148±35	1194
Salol 20C 180C	0.232±0.002 0.206±0.002	1544±15 1440±20	-	-

*The upper value is given for the case when ~10 components were observed; the lower value, when 2 components were observed.

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L 6397-66

ACC NR: AP5026105

experimental error for all materials tested except carbon disulfide. The hypersonic velocity in carbon disulfide decreased with an increasing number of Brillouin components and increased with an increasing power of the pulses. The dependence of velocity (or $\Delta\nu$) on the number of components was attributed to heating of the scattering medium due to absorption of hypersound. It is possible that a small decrease in hypersonic velocity also occurred in other materials. Such a decrease would limit the accuracy with which the hypersonic velocity could be determined by means of stimulated Brillouin scattering. The ~5% dispersion observed in nitrobenzene at 20C makes it possible to evaluate its main relaxation parameters. Orig. art. has: 2 figures and 1 table. [CS]

SUB CODE: OP/ SUBM DATE: 19Jul65/ ORIG REF: 004/ OTH REF: 010/ ATD PRESS: 4141

L 10646-66 FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c)

ACC NR: AP6002662 WG/WH SOURCE CODE: UR/0386/65/002/012/0562/0566

AUTHOR: Nash, N. I.; Murzov, V. V.; Starunov, V. S.; Fabelinskiy, I. L.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Stimulated Brillouin scattering in gas

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 12, 1965, 562-566, and insert facing page 584

TOPIC TAGS: laser, gaseous laser, nonlinear optics, Brillouin scattering

ABSTRACT: The authors report observing stimulated Brillouin scattering in hydrogen at a pressure of 95 atm, in nitrogen at 100 and 125 atm, and in oxygen at 75, 100, and 150 atm using an experimental setup described in Zhurnal eksperimental'noy i teoreticheskoy fiziki, Pis'ma v redaktsiyu, v. 2, no. 1, 1965, p. 41. The focused output of the Q-switched ruby laser was 250 Mw. Four Stokes components were observed in nitrogen, four Stokes components and one faint anti-Stokes component were observed in oxygen, and two Stokes components were observed in hydrogen. The hypersound velocities determined from the experimental data are listed in Table 1, together with the adiabatic and isothermal velocities and certain parameters of the medium and experimental conditions. Stimulated Brillouin scattering was not observed in

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L 10640-66

ACC NR: AP6002662

Table 1.

	P, atm	n	$f \times 10^{-9}$,	$\lambda \times 10^{5}$, cm	α/f^{2}	Experimental data		Variation of isothermal v/sec	isothermal v/sec
						$\Delta\nu \cdot 10^{-2}$ cm	hypersound velocity (m/sec)		
N_2	125	1,035	0,84	3,3	0.05	2,8±0.1	280±10	352	297
O_2	150	1,038	0,99	3.3	0.05	3,3±0,3	330±30	321	320
H_2	35	1,002	3.3	3.4	0.14	11±1	1100±100	1234	1127
He	100	1,005	2.5	3.5	1.7	-	-	1035	703

n is the wavelength of hypersound
α_n is the amplitude coefficient for sound absorption

Card 2/3

L 10646-66

ACC NR: AP6002662

helium even at a pressure of 140 atm. The experimental data are interpreted in terms of the classical theory developed earlier by one of the authors (Fabelinskiy). Orig. art. has: 1 figure and 1 table. [CS]

SUB CODE: 20 / SUBM DATE: 09Nov65/ ORIG REF: 004/ OTH REF: 003/

ATD PRESS: 4169

HW

Card 3/3

L 26607-65 EWG(j)/EWA(h)/FBD/EWT(1)/EWT(m)/EPF(c)/EWG(k)-2/EPF(n)-2/EPR/EEC(t)/T/EWP(t)/EWG(h)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Pr-4/Pg-4/Peb/Pad/Pm-4/Pi-4 IJP(c) WW/JW/JG S/0109/65/010/002/0376/0377

ACCESSION NR: AP5002459

AUTHOR: Kuznetsov, A. K.; Mash, D. I.

TITLE: Operating conditions of a helium-xenon laser in the middle infrared region of the spectrum

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 376-377

TOPIC TAGS: laser, helium xenon laser, laser radiation spectrum, laser detector, IR laser

ABSTRACT: Investigations in the middle infrared region of the spectrum were made on a He-Xe laser fitted with two external mirrors: a spherical Ge plate and a spherical silver-coated mirror. Mirror curvature radii and spacing between mirrors were 3 m; discharge tube length was 280 cm, and tube diameter was 15 mm. The discharge was excited with a hf oscillator tuned at 30 Mc. Gold-alloyed Ge served as the radiation receiver. At a ratio of He and Xe partial pressures of 200/1, nine generation lines, corresponding to 5d → 6p transitions were obtained. (See Table 1 of Enclosure). The highest generations were observed in the 3.5070- and 5.5738-μ lines; the lowest, in the 3.1069- and 7.314-μ lines. The intensities of the 3.5070, 5.5738-, 3.3667-, 3.9955-, and 9.0040-μ lines were in the ratio 100/80/25/10/3. Orig. art. has: 1 figure and 1 table. [DW]

Card 1/3

L 26697-65
ACCESSION NR: AP5005359

ASSOCIATION: Fizicheskiy institut im P. N. Lebedeva, AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 19Feb64 ENCLOSURE: 01 SUB CODE: EC, OP

NO REF SOV: 002 OTHER: 001 ATD PRESS: 3188

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L 26607-65

ACCESSION NR: AP5005359 ENCLOSURE: 01

Wave-length, μ	Transition	Wave-length, μ	Transition
2.0514	$5d(3/2)^0_4 - 6p(1/2)_1$	3.9025	$5d(5/2)^0_4 - 6p(1/2)_1$
3.1060	$5d(5/2)^0_4 - 6p(3/2)_1$	5.5738	$5d(7/2)^0_4 - 6p(5/2)_1$
3.3067	$5d(5/2)^0_4 - 6p(3/2)_1$	7.3147	$5d(3/2)^0_4 - 6p(3/2)_1$
3.5070	$5d(7/2)^0_4 - 6p(5/2)_1$	0.0010	$5d(3/2)^0_4 - 6p(3/2)_1$
3.6940	$5d(5/2)^0_4 - 6$		

Table 1. Linear of generation and corresponding transitions

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48095-65 EWA(h)/EWD/EWG(r)/EWT(1)/EWT(m)/EPF(c)/ELC(k)-2/EPF(n)-2/EPR/EEC(t)/T/EWP(t)/
EC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pu-4/Pr-4/Po-4/Pf-4/Pr-4/Ps-4/Peb/Pf-4/Pu-4/Pl-4
GGTB/IJP(c) WW/JD

ACCESSION NR: AP5012615 UR/0051/65/018/005/0866/0869

AUTHOR: Yuan, P. [illegible]; Pogolovskiy, V. P.; Chirina, L. F. 83 B

TITLE: Experimental investigation of the beam divergence of a neon-helium laser

SOURCE: Optika i spektroskopiya, v. 18, no. 5, 1965, 866-869

TOPIC TAGS: laser, neon laser, helium laser, neon helium laser, laser beam divergence

ABSTRACT: The beam divergence angle was measured for various modes and mirror combinations. The results are compared with values calculated by formulas given by Boyd and Gordon (Bell System Techn. J., 40, 1961, 489) and Boyd and Kogelnik (Bell System Techn. J., 41, 1962, 134). The angle of divergence in a confocal system comprising mirrors with a radius of curvature of 184 cm for the TEM_{00} mode was calculated to be 2.2' after the introduction of a correction for the refraction within the quartz substrate (refractive index = 1.45), while the measured divergence was found to be 3'. The analogous figures for the TEM_{00} mode in a nonconfocal system with a mirror radius of curvature of 2 m and distance between them of 3 m, were 2.65' (calculated) and 3.5' (measured). The measurement results for other modes in confocal and nonconfocal systems are given in a table. Further measurements were conducted with mirrors of slightly different curvature (1850 and 1855 mm) to estab-

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L 48095-65

ACCESSION NR: AP5012615

lish the dependence of the multimode beam divergence on the distance between the mirrors. A sharp increase of divergence was observed at mirror distances close to the curvature radii of the mirrors. Different mode images at both ends of the resonator were obtained at a distance value between the curvature values of the mirrors. The mode images at mirror distances below the smaller and above the larger curvature were identical at both ends and displayed minima of the divergence angle at one or the other end of the resonator: at the mirror with larger curvature the minimum divergence appeared at a distance greater than its curvature, and at a distance smaller than the curvature at the opposite end. The nature of these minima remained obscure. In the case of a combination of a plane and a spherical mirror (2 m curvature radius) at opposite ends, a slowly decreasing divergence of a multiple beam was observed within the distance range from 90 to 150 cm. At the spherical mirror of a 5-mm tube, the divergence started at 10.5' and decreased to 0.5' at 140 cm. At the plane end, the divergences were 7.5' and 7.0', respectively. For the TEM_{00} mode, the divergence started between 3 and 4', showed a flat minimum at about 105 cm, and increased slowly to about 4' at 140 cm. Orig. art. has: 4 figures and 5 formulas. [FP]

ASSOCIATION: none

Card 2/3

L 48095-65

ACCESSION NR: AP5012615

SUBMITTED: 16Mar64 ENCL: 00 SUB CODE: EC

NO REF SOV: 000 OTHER: 002 ATD PRESS: 4002

Card 3/3

L 13271-66 EWT(1)/EWT(m)/EEC(k)-2/EWP(j)/T/EWP(k)/EWA(m)-2 IJP(c) WG/ET

ACC NR: AP6002715 SOURCE CODE: UR/0056/65/049/006/1764/1773

AUTHOR: Mash, D. I.; Starunov, V. S.; Tunaev, Ye. V.; Fabelinskiy, I. L. 56

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR) B

TITLE: The intensity and width of the Brillouin components in liquids and the damping of hypersound

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 6, 1965, 1764-1773

TOPIC TAGS: hypersound, ~~scattering~~, Rayleigh scattering, Brillouin ~~scattering~~ zones, ~~flow~~, ~~viscosity~~, ~~transmissible~~ thermodynamics, laser, hypersonic flow

ABSTRACT: An expression is derived for the relaxation time of bulk viscosity on the basis of the hydrodynamic and relaxation theories for sound propagation in a liquid. This makes it possible to determine the relaxation time from measurements of sound absorption and sound dispersion and to check the validity of the simplest relaxation theory with one relaxation time. In the experiments conducted, an He—Ne laser was used to investigate the spontaneous Brillouin scattering in the following liquids: C_6H_6, CCl_4, $CHCl_3$, $C_6H_5CH_3$, and CH_2Cl. The hypersound velocity in these liquids at a frequency of 4×10^{9} cps was determined from the distances between the peaks of the Brillouin components, while the coefficient of absorption was determined from their

Card 1/2

L 13271-66

ACC NR: AP6002715

linewidths. The experimental data for some liquids agreed with the results of the relaxation theory involving one relaxation time. The relative intensities of the Brillouin components were measured and compared with theoretical data. Orig. art. has: 10 formulas, 4 tables, and 5 figures. [CS]

SUB CODE: 20/ SUBM DATE: 21Jul65/ ORIG REF: 012/ OTH REF: 012/ ATD PRESS: 4/81

Card 2/2

L 24204-66 EWT(1)/EWP(e)/EWT(m)/T/EWP(t) IJP(c) JD/WH

ACC NR: AP6014615 SOURCE CODE: UR/0386/66/003/009/0378/0382

AUTHOR: Krivokhizha, S. V.; Mash, D. I.; Morozov, V. V.; Starunov, V. S.; Fabelinskiy, I. L.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Induced Mandel'shtam-Brillouin scattering in single-crystal quartz at temperatures 2.1--300K

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 9, 1966, 378-382

TOPIC TAGS: quartz, single crystal, light scattering, laser application, line shift

ABSTRACT: The following effects were observed in induced Mandel'shtam-Brillouin scattering (IMBS) in single-crystal quartz: a strong increase in the shift of the Stokes component, due to the quasilongitudinal hypersonic wave, as the temperature was lowered from 80 to 2.1K; occurrence of a Stokes component of IMBS due to the quasitransverse wave at 80K and a difference in the character of the damage to the single crystal in the focused laser beams at different temperatures and for practically constant light-pulse power. The investigation was made with a previously-described installation (Pis'ma ZhETF v. 2, 41, 1965). The giant light pulse from a ruby laser, of ~250 Mw power, was focused onto the interior of the crystal sample, which was either at room temperature or placed in a cryostat filled with liquid helium or liquid nitrogen. All crystal samples were cut from a single block of

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L 24204-66

ACC NR: AP6014615

5

Brazilian quartz. The frequency shifts $\Delta\nu$ of the Stokes components are tabulated. It is shown that $\Delta\nu$ doubles in the temperature interval 80--4K and continues to increase with decreasing temperature. To explain the observed large increase in the frequency it must be assumed that under the conditions of the experiment the refractive index and the speed of the hypersound change noticeably under the influence of the strong electric field of the light wave at low temperature. An analysis shows that the influence of the electric field on the refractive index and the speed of the hypersound are apparently not the only causes of the observed appreciably increase of $\Delta\nu$ at low temperature. The observed strong difference in the outward appearance of the damage in the single crystal of quartz at different temperatures is attributed to the fact that at 80K the absorption of the hypersound is somewhat smaller than at 300K, and this decrease is apprently sufficient to produce under certain conditions DMS without damaging the crystal. When the temperature is lowered to 4.2K, the absorption coefficient becomes even smaller, and usually no damage occurs. If damage is still observed in this case, it can be attributed to the strong narrowing of the light channel, and consequently the increase in the intensity of the light and hypersound. The authors thank L. V. Keldysh and Yu. P. Raizer for useful remarks made during the discussion of the results, and to O. N. Vol'skaya, M. A. Vyrotskaya, and V. P. Zaytsev for help with the work. Orig. art. has: 1 formula and 1 table. [02]

SUB CODE: 20/ SUBM DATE: 19Mar66/ ORIG REF: 007/ OTH REF: 005/ ATD PRESS 4245

Card 2/2 BLG

ACC NR: AP7002677 SOURCE CODE: UR/0109/67/012/001/0150/0153

AUTHOR: Kuznetsov, A.A.; Mash, D.I.; Skuratova, N.V.

ORG: none

TITLE: Effect of an axial magnetic field on the output power of a neon-helium laser simultaneously generating the 3.39 and 0.6328 μ lines

SOURCE: Radiotekhnika i elektronika, v. 12, no. 1, 1967, 150-153

TOPIC TAGS: gas laser, laser energy, neon, helium, laser pumping, axial magnetic field

ABSTRACT:

The effects of an axial d-c magnetic field on the power output of helium-neon lasers operating at λ = 6328 and 33,900 Å were examined. The laser used a 160-cm-long quartz tube (inside diameter, 8 mm) filled with a helium-neon mixture and terminating in quartz windows placed at the Brewster angle with respect to the tube axis. Excitation was established with a high-frequency generator. The longitudinal d-c magnetic field was generated by four 23-cm-long coils (18,900 turns in each coil) spaced regularly along the laser tube. Output power of the λ = 6328 Å radiation was determined by measuring the current generated in an FSK-1 photocell, and the power of the λ = 33,900 Å

Card 1/2 UDC: 621.373.029.67.001.5

ACC NR: AP7002677

radiation was established with a PbS detector. The dependence of the output power on the pressure of the $\lambda = 6328$ Å radiation was found, and for each value of pressure the optimal pumping power was determined. The above procedure was repeated in the presence of a magnetic field; the pumping power and the coil current, for all pressures, were chosen to give maximum radiated power for $\lambda = 6328$ Å. The maximum radiated power for $\lambda = 6328$ Å increased by a factor of 1.5 after the magnetic field was applied. The optimal pressure (for peak output power) in the presence of the magnetic field was somewhat greater than the pressure with no magnetic field, and the working pressure range is somewhat greater in the presence of the magnetic field. Changes in output power caused by variations in the magnetic field were studied for both wavelengths, and at optimal pressures for the $\lambda = 6328$ Å radiation. The output power for $\lambda = 6328$ Å increases and then decreases, whereas that for $\lambda = 33,900$ Å decreases as the magnetic field increases until oscillation ceases. [IV]

SUB CODE: 20/ SUBM DATE: 06May66/ OTH REF: 003/ ATD PRESS: 5114

Card 2/2

85567
S/119/63/000/001/006/016
D201/D308

9.7150

AUTHORS: Mash, D.M., Pruss, K.V. and Sorokin, A.N.

TITLE: Contactless position pick-up

PERIODICAL: Priborostroyeniye, no. 1, 1963, 16

TEXT: This is a description of the position pick-up type Д-3 (D-3) designed by VNIIStroydormash with a view to eliminating the effect of the pick-up on the controlled moving system. The pick-up is basically a transistorized oscillator with two amplifiers. The coupling between the tank and feedback is adjusted, or varied as the case may be, by the insertion of a metal plate with the gap between the ferrite cores of the two coils. This method also makes it possible to vary the start time of generated pulses, the metal plate being connected to the moving controlled system. The minimum width of the metal plate is 3 mm. The components of the pick-up are enclosed in a glass cylinder. The supply is 15 V and max current is 40 mA. Experiments have shown that the pick-up operates satisfactorily with supply variations up to ± 50% and at ambient tempera-

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S/119/63/000/001/006/016
D201/D308

Contactless position pick-up

tures from - 30 to + 40°C, at pulse repetition frequencies up to 10 kc/s. The great accuracy of the pick-up allows its use for weighing and other linear position measurements and its use as linear and angular position digital transducer. There are 2 figures.

Card 2/2

L 39132-65 EWG(b)-2/EWT(1)/T Pi-4 IJP(c) CC

ACCESSION NR: AP5006872 S/0181/65/007/003/0717/0721

25
24
B

AUTHOR: [illegible], I. R.; [illegible], M. I.

TITLE: Appearance of cross relaxation and spectrum of exchange-coupled ion pairs in paramagnetic crystals

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 717-721

TOPIC TAGS: cross relaxation, exchange coupling, paramagnetic crystal, nuclear magnetic resonance, electron paramagnetic resonance, spin spin temperature

ABSTRACT: Manifestations of cross relaxation are analyzed with account of the possibility of changing the spin-spin temperature, which was demonstrated first by B. M. Provotorov (ZhETF v. 42, 882, 1962). By analyzing the equations of "pure" cross relaxation (neglecting relaxation in the lattice) it is shown that the tendency to equalization of the temperatures of the interacting transitions appears only if these transitions are close to being equidistant or of integer multiplicity; in all other cases the cross relaxation is manifest only in a strong change in the spin-spin temperature. An experimental confirmation is found from recent NMR experiments with LiF (Jeener et al., Phys. Rev. 133, A 478,

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L 43943-65

ACCESSION NR: AP5006872

1964). An analysis of EPR experiments in paramagnetic crystals also leads to the hypothesis that ion pairs coupled by exchange interaction make a contribution to cross relaxation. An exact calculation (without the use of perturbation theory) is made of the energy spectrum of such pairs for runs in a magnetic field parallel to the crystal axis. Orig. art. has: 1 figure and 2 formulas.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR, Moscow (Institute of Radio Engineering and Electronics, AN SSSR)

SUBMITTED: 22Jan64 ENCL: 00 SUB CODE: NP, SS

NR REF SOV: 006 OTHER: 002

Card 2/2

MASH, R.D., uchitel'.

Demonstration experiments illustrating I.P.Pavlov's theory of conditioned reflexes. Mat.v shkole no.6:70-79 '53. (MLRA 6:10)

1. Srednyaya shkola no.1 g. Gus'-Khrustal'nyy Vladimirskoy oblasti.
(Conditioned response)

MASH, R.D., uchitel'.

Experiments in the study of conditioned reflexes. Biol. v shkole no.3:44-50 My-Je '57. (MIRA 10:6)

1. Shkola No.516 g. Moskvy.
(Physiology--Study and teaching) (Conditioned response)

MASH, R.D.

Lesson on the topic "Higher nervous activity in man". Biol. v shkole no.1:34-40 Ja-F '60. (MIRA 13:5)

1. Institut metodov obucheniya Akademii pedagogicheskikh nauk RSFSR.

(CONDITIONED RESPONSE)

MASH, R.D.; CHEBUNINA, A.N., uchitel'nitsa

Independent work of students in studying the higher nervous activity of animals. Biol. v shkole no.2:30-34 Mr-Ap '61. (MIRA 14:3)

1. Institut obshchego i politekhnicheskogo obrazovaniya Akademii pedagogicheskikh nauk RSFSR (for Mash). 2. Shkola No.315 go. Moskva (for Chebunina).
(Physiology—Study and teaching)
(Conditioned response)

MEL'NIKOV, M.I.; PADALKO, N.V.; MASH, A.D.

Using the materials of 22d Congress of the CPSU in teaching biology. Biol. v shkole no.1:12-18 Ja-F '62. (MIRA 15:1)

1. Institut obshchego i politekhnicheskogo obrazovaniya Akademii pedagogicheskikh nauk RSFSR.
(BIOLOGY—STUDY AND TEACHING)

MASH, R.D.

"Use of experiments in the propaganda of medical and hygienic knowledge" by N.B.Korostelev. Reviewed by R.D.Mash. Biol.v shkole no.6:91-92 N-D '62. (MIRA 16:2)

1. Institut obshchego i politekhnicheskogo obrazovaniya Akademii pedagogicheskikh nauk RSFSR.
(Health education) (Korostelev, N.B.)

MASH, V.

Factors of labor productivity in the United States ("Economic factors of productivity." Reviewed by V.Mash). Biul.nauch.inform.; trud i zar.plata no.8:67-72 '59. (MIRA 13:1)
(United States--Efficiency, Industrial)

MASH, V.

Calculating time consumed in operations for the control of production quality. Biul.nauch.inform.: trud i sar. plata 3 no.12:65-68 '60. (MIRA 14:3)

(United States—Quality control)

MASH, V.

Determining time expended per unit of production in the U.S.A.
Sots. trud 5 no.9:94-97 S '60. (MIRA 13:10)
(United States—Production standards)
(Correlation (Statistics)

MASH, V.

Mathematical methods for the optimum distribution of enterprises in the multistage production and consumption systems.
Vop. ekon. no.10:75-86 O '62. (MIRA 15:11)
(Economics, Mathematical) (Industries, Location of)

S/0208/64/004/002/0376/0379

ACCESSION NR: AP4024571

AUTHOR: Mash, V. A. (Moscow)

TITLE: Procedure for choosing the introduced variable in the simplex method of linear programming

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 4, no. 2, 1964, 376-379

TOPIC TAGS: linear programming, simplex method, artificial variable, variable

ABSTRACT: An alternative to the usual method for the elimination of artificial variables is suggested. In the simplex method, if a system of restraints for a general problem in linear programming does not have a diagonal matrix, artificial variables are introduced. The choice of these variables is based on the quickest elimination of them from the tableau. In this way, an admissible tableau is obtained which does not contain the artificial variables. It must then be refined to the optimal. In this method, the elimination of artificial variables by successive refinements is accomplished not by a "very quick" but by a "very

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ACCESSION NR: AP4024571

economical" procedure. The tableau after each iteration is conditionally optimal. The reduction to zero of the values of the artificial variables and the optimal tableau are obtained simultaneously. Orig. art. has: 10 equations.

ASSOCIATION: none

SUBMITTED: 25Sep63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: MM NO REF SOV: 003 OTHER: 003

Card 2/2

L 05230-67 EWT(d)/EWP(1)
ACC NR: AR6017089 SOURCE CODE: UR/0372/65/000/012/V039/V039

30
B

AUTHOR: Mash, V. A.

TITLE: Certain complicated variants of transportation and distribution problems in linear programming

SOURCE: Ref. zh. Kibernetika, Abs. 12V256

REF SOURCE: Sb. Ekon. -matem. metody, Vyp. 2. M., Nauka, 1965, 304-337

TOPIC TAGS: linear programming, industrial production, computer theory, economic geography

ABSTRACT: The author expounds the complex whole of techniques serving to reduce a number of problems of optimal planning to the transportation (or distribution) problem without any additional constraints. If, however, additional constraints are necessary, their number is reduced to a minimum. The following types of problems are considered: a) multistage distribution problem; b) multistage distribution problem with feedback; c) problem of the optimal distribution of enterprises for a "closed" multibranch system; d) combined production problem with discrete variation in parametric modes; e) problem d) for the case of continuous variation

Card 1/2 UDC: 512.25/.26+519.3:330.115

L 05230-67
ACC NR: AR6017089

in parametric modes; f) problem of incomplete combined production; g) problem of optimal geographic distribution of enterprises in the presence of a limited total amount of capital investments; h) problem of optimal scheduling of current shipments of timber in the USSR national economy. Certain findings of machine experiments are presented. Bibliography of 5 titles. Yu. Finkel'shteyn. [Translation of abstract]

SUB CODE: 09, 05, 13/

Card 2/2

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MASHAGATOV, V.F. (Izhevsk)

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(VARZI-YATCHI--BATHS, MOOR AND MUD)
(CARDIOVASCULAR SYSTEM)

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(BLOOD--CIRCULATION, DISORDERS OF)
(DIGESTIVE ORGANS--DISEASES)

MASHAGATOV, V.F., dotsent

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1. Chlen-korrespondent AN Kazakhskoy SSR.

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1. Klinika sosudistykh psikhozov (zav. - prof. V.M.Banshchikov) Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhi trii Ministerstva zdravookhraneniya RSFSR.
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SAVCHUK, V.I., kand.med.nauk; MASHANOVA, G.A.

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1. Laboratoriya patofiziologii vysshey nervoy deyatel'nosti (zav. - laboratoriyey - prof. Yu.N.Uspenskiy) i klinika sosudistykh psikhozov (zav. klinikoy - prof. V.M.Banshchikov) Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii Ministerstva zdravookhraneniya RSFSR.
(CONDITIONED RESPONSE) (CEREBRAL ARTERIOSCLEROSIS)
(MENTAL ILLNESS)

KAZAKOVA, P.B., kand.med.nauk; MASHANOVA, G.A., mladshiy nauchnyy sotrudnik

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1. Klinika sosudistykh psikhozov (zav. - prof. V.M.Banshchikov) i otdeleniye patomorfologii tsentral'noy nervnoy sistemy (zav. otdeleniyem - kand.med.nauk A.P.Levkovich-Sokolova) Gosudarstvennogo nauchno-issledovatel'skogo instituta psihiatrii Ministerstva zdravookhraneniya RSFSR.
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MASHANOVA, V.A.; UMAKULOV, A.U., aspirant

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1. Klinika sosudistykh psikhozov (zav. - prof. V.M.Banshchikov) Gosudarstvennogo nauchno-issledovatel'skogo instituta psikhiatrii Ministerstva zdravookhraneniya RSFSR i klinika nervnykh bolezney I Moskovskogo meditsinskogo instituta (ispolnyayushchiy obyazannosti zaveduyushchego klinikoy - dotsent A.S.Mel'nikov).
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1. Iz Novosibirskogo instituta vosstanovitel'noy khirurgii i ortopedii

(DURA MATER, surg.
exper. in open brain inj.)
(BRAIN, wounds and inj.
exper., surg. of dura mater)
(WOUNDS AND INJURIES, exper.
brain, surg. of dura mater)

MASHANSKIY, F.I.

MASHANSKIY, F.I., professor

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(CEREBRAL VENTRICLES, diseases,
cysticercosis of fourth ventric. with aversion to sweet & fatty foods (Rus))
(CYSTICERCOSIS, manifestations,
fourth ventric., aversion to sweet & fatty foods (Rus))
(APPETITE DISORDERS, etiology and pathogenesis,
aversion to sweet & fatty foods caused by cysticercosis of fourth ventric (Rus))

MASHANSKIY, F.I.; RAZDOL'SKIY, I.Ya.; KOROTKEVICH, M.S.; TERPUGOV, Ye.A.

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1. Gosudarstvennyy nauchno-issledovatel'skiy psikhonevrologicheskiy institut imeni V.M. Bekhterova.
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MASHANSKIY, F.I.

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1. Neyrokhirurgicheskoye otdeleniye Gosudarstvennogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta imeni Bekhtereva.
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1. Neyrokhirurgicheskoye otdeleniye Leningradskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta imeni V.M. Bekhtereva (dir. - B.A. Lebedev).

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1. Nauchno-issledovatel'skiy psikhonevrologicheskiy institut imeni V.M. Bekhtereva (dir. - B.A. Lebedev).

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1. Neyrokhirurgicheskoye otdeleniye (zav. - prof. F.I. Mashanskiy) Leningradskogo nauchno-issledovatel'skogo psikhonevrologicheskogo instituta imeni V.M. Bekhtereva (dir. - B.A. Lebedev).

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1. Laboratoriya morfologii kletki Instituta tsitologii AN SSSR, Leningrad.

(MICROSCOPY--TECHNIQUES)

MASHANSKIY, V.F.; KOMISSARCHIK, Ya.Yu.; RYBIN, M.A.; VINNICHENKO, L.N.

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1. Laboratoriya mikroskopii Instituta tsitologii AN SSSR, Leningrad.
(BIOLOGICAL LABORATORIES--EQUIPMENT AND SUPPLIES)

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1. Laboratoriya mikroskopii Instituta tsitologii AN SSSR, Leningrad i TSitologicheskaya laboratoriya Leningradskogo instituta perelivaniya krovi.
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1. Laboratoriya morfologii kletki Instituta tsitologii AN SSSR, Leningrad.
(CELL NUCLEI) (ELECTRON MICROSCOPY)

KARPAS, A.M.; MASHANSKIY, V.F.

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(CYTOLOGY) (HISTOLOGY) (ELECTRON MICROSCOPY)
(POLICARD, A.) (BAUD, C.)

MASHANSKIY, V.F.

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1. Laboratoriya mikroskopii Instituta tsitologii AN SSSR, Leningrad.
(TEMPERATURE—PHYSIOLOGICAL EFFECT) (INFUSORIA)
(MITOCHONDRIA)

KOMISSARCHIK, Ya.Yu.; MASHANSKIY, V.F.

Work experience with a standard domestic UMT-2 ultramicrotome. Izv. AN SSSR.Ser.fiz. 25 no.6:764-765 Je '61. (MIRA 14:6)

1. Laboratoriya mikroskopii Instituta tsitologii Akademii nauk SSSR.

(Microtome)

[illegible] A[illegible]V, V.[illegible], kand.med.nauk (Leningrad)

Electron microscope and cells. [illegible] 2[illegible] no.6:65-67 Je '61. (MIRA 14:7)
(Electron microscope)
(Cells)

MASHANSKIY, V. F.

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Institute of Cytology AS USSR Laboratory of Microscopy

JPRS

MASHANSKIY, V.F.

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1. Laboratoriya mikroskopii Instituta tsitologii AN SSSR, Leningrad.

(MITOCHONDRIA) (INFUSORIA)

MASHANSKIY, V.F.

Structure of the membranes of mitochondria. TSitologiia 5 no.5:555-558 S-O '62. (MIRA 18:5)

1. Laboratoriya elektronnoy mikroskopii Instituta tsitologii AN SSSR, Leningrad.

MASHANSKIY, V.F.

Electron microscopic study of the macronuclei of certain infusorians. Sbor. rab. Inst.tsit. no. 3:3-8 '63. (MIRA 17:7)

1. Laboratoriya mikroskopii Instituta tsitologii AN SSSR.

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1. Laboratoriya mikroskopii i laboratoriya kosmicheskoy biologii Instituta tsitologii AN SSSR, Leningrad.

Mio

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. . . laboratoriya mikroskopii Instituta tsitologii AN SSSR, Leningrad.

BULYCHEV, A.A.; [illegible]SHANSKIY, V.F.

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1. Laboratoriya biokhimii kletki i laboratoriya mikroskopii Instituta tsitologii AN SSSR, Leningrad.

TSVILENEVA, V.A.; MASHANSKIY, V.F.

Structure of the cuticle in some ixodid ticks. Izv. AN SSSR. Ser. biol. no.5:787-792 S-O '65. (MIRA 18:9)

1. Institut zoologii i parazitologii AN Tadzhikskoy SSR, Dushanbe.

KOMKOVA, A.I.; MASHANSKIY, V.F.; ROGOZKIN, V.A.

Use of phosphoprotein phosphatase in discovering phosphoproteins in the ultrastructures of cell organoids. TSitologiia 7 no.5:679-681 S-O '65. (MIRA 18:12)

1. Laboratoriya khimii belka Leningradskogo universiteta, laboratoriya mikroskopii Instituta tsitologii AN SSSR i laboratoriya biokhimii Nauchno-issledovatel'skogo instituta fizicheskoy kul'tury, Leningrad. Submitted May 24, 1964.

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Dehydrochlorination of di- and monochloralkylsilane chlorides. Rearrangement of 1,2-bis-(trichlorosilyl)chloroethane during the dehydrochlorination with aluminum chloride. Izv.AN SSSR Otd.khim.nauk no.5:550-558 My '56. (MIRA 9:9)

1.Institut organicheskoy khimii imeni N.D.Zelinskogo Akademii nauk SSSR.
(Hydrochloric acid) (Silane) (Ethane)

ZHDANOV, V.M.; MEL'NIKOVA, L.A.; KOZLOVA, I.A.; BALANDIN, I.G.; PETERSON, G.P.; MASHARINA, L.

Suppression of the synthesis of smallpox vaccine virus by histone. Dokl. AN SSSR 165 no.5:1182-1183 D '65. (MIRA 19:1)

1. Institut virusologii im. D.I.Ivanovskogo AMN SSSR.
2. Deystvitel'nyy chlen AMN SSSR (for Zhdanov). Submitted August 6, 1965.

LAZAREVA, A.P.; MASHARINA, L.A.

Stresses in the earthquake centers of the arctic seismic belt. Izv. AN SSSR. Fiz. zem. no.2:5-10 '65. (MIRA 18:6)

1. Institut fiziki Zemli AN SSSR.

VANYUSHIN, B. F.; MASHARINA, L. V.; BELOZERSKIY, A. N., akademik

Pyrimidine distribution in deoxyribonucleic acids. Dokl. AN SSSR 147 no.4:958-961 D '62. (MIRA 16:1)

1. Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova.

(Nucleic acids) (Pyrimidines)

MASHARIPOV, N.P.

Influence of water supply from wells on the incidence of intestinal infections in small sections of Tashkent. Med. zhur. Uzb. no.4:34-37 Ap '61. (MIRA 14:5)

1. Iz Uzbekskogo nauchno-issledovatel'skogo instituta sanitarii, gigiyeny i profzabolevaniy (direktor - dotsent A.Z.Zakhidov).
(TASHKENT—INTESTINES—DISEASES)
(WATER—ANALYSIS)

AMINOVA, R.Kh., kand. ist. nauk; TETENEVA, L.G., kand. ist. nauk; ALIMOV, I.A.; DMITRIYEV, G.L.; DZHAMALOV, G.B., doktor ekon. nauk, redaktor ; DZHURAYEVA, T., kand. ist. nauk, red.; ATFENYUK, S.Ya., red ; DANILOV, V.P., glav. red.; BELOV, G.A., red.; GRIGORYAN, L.L., red.; IBRAGIMOV, Z.I., red.; IVNITSKIY, N.A., red.; IL'YASOV, S.I., red.; KAKABAYEV, S.D., red.; KAMENSKAYA, N.V., red.; KRAYEV, M.A., red.; KULIYEV, O.K., red ; MAKHARADZE, N.B., red.; OBICHKIN, G.D., red.; PLESHAKOV, S.T., red.; RADZHABOV, Z.I., red.; SELEZNEV, M.S., red.; TURSUNBAYEV, A.B., red.; FEDOROV, A.G., red.; SHEPELEVA, T.V., red.; PATLAKH, B., red.; MASHARIPOVA, D., red.; BULATOVA, R., red.; GOR'KOVAYA, Z.P., tekhn. red.; KARABAYEVA, Kh.U., tekhn. red.

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TITLE: Application of the Perfect Differential Method to the Solution of Quantum Mechanical Problems

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TEXT: The perfect differential method put forward by Maurin (Ref.1) consists in the following: the solution of

$$\hat{L}\psi(x) = 0 \qquad (1)$$

where $\hat{L}$ is a linear differential operator, is written down in the form

$$\psi(x) = \int_{k_1}^{k_2} \alpha(k)\, e^{F(k,x)}\, dk, \qquad (2)$$

where $\alpha(k)$ and $F(k,x)$ are the required functions. Substitution of Eq.(2) into Eq.(1) gives

$$\hat{L}\psi(x) = \int_{k_1}^{k_2} \alpha(k)\, \hat{\Lambda}\left(\frac{\partial F}{\partial x}\right) e^{F(k,x)}\, dk, \qquad (3)$$

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Application of the Perfect Differential Method to the Solution of Quantum Mechanical Problems

where $\hat{\Lambda}$ is a certain linear operation on $\partial F/\partial x$. The order of this operation is lower by one than the order of $\hat{L}$. Next, the following condition is introduced

$$\alpha(k)\,\hat{\Lambda}\left(\frac{\partial F}{\partial x}\right) e^{F(k,x)} = \frac{\partial}{\partial k}\left\{\alpha(k) e^{F(k,x)}\right\}, \qquad (4)$$

and when this is substituted into Eq.(3) the final result is

$$\hat{L}\psi(x) = \alpha(k)\, e^{F(k,x)} \Big|_{k_1}^{k_2} . \qquad (5)$$

If k_1 and k_2 are chosen so that the following equation is satisfied

$$\alpha(k_2)\, e^{F(k_2,x)} = \alpha(k_1) e^{F(k_1,x)} \qquad (6)$$

then the equation $\hat{L}\psi = 0$ will be satisfied by the solution given by Eq. (2) with the above limits. The function αe^{F} is

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